Essroc
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January 30, 2014

Director, Air Enforcement Division
U.S. Environmental Protection Agency
MC 2242A
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Washington, D.C. 20460

Mark Wejkszner
Air Quality Program Manager
PA Department of Environmental Protection
2 Public Square
Wilkes-Barre, PA 18711

Chief, Air Enforcement Branch
U.S. EPA Region III
1650 Arch Street (3PM52)
Philadelphia, PA 19103-2029

George Czerniak
U.S. EPA Region V
77 W. Jackson Blvd. (AE-17J)
Chicago, IL 60604

Chief, Environmental Enforcement Section
Environment and Natural Resources Div.
U.S. Department of Justice
Box 7611 Ben Franklin Station
Washington, D.C. 20044-7611
Re: DOJ No. 90-5-2-1-09608

Puerto Rico Environmental Quality Board
Pedro Nieves Miranda, Chairman
Attn: Luis R Sierra Torres, Manager Air Quality Area
PO Box 11488
San Juan, PR 00910

Chief, Air Compliance Branch
USEPA Region 2
290 Broadway- 21st Floor
New York, NY 10007-1866

Jesse Adkins, Assistant Director,
Compliance and Enforcement Section
West Virginia Division of Air Quality
601 57th Street SE
Charleston, WV 25304

Indiana Department of Environmental Management
Office of Air Quality
Chief, Air Compliance and Enforcement Branch
100 N. Senate Avenue
Mail Code 61-53 IGCN 1003
Indianapolis, IN 46204-2251

Re: Essroc Cement Company – Consent Decree
Civil Action No. 2:11-cv-650-DSC
Semi-Annual Report

To Whom It May Concern:

Enclosed is Essroc's Semi-Annual report for the period July 1 to December 31, 2013. Please telephone me or Philip J. Schworer (859) 817-5903, if you have any questions.

Very truly yours,

Derek Nicholls
Senior Vice President & Technical Director

CINLibrary 0000000.0001524 3003697v1

ESSROC CEMENT CORP

CONSENT DECREE

SEMI-ANNUAL REPORT

January, 2014

TABLE OF CONTENTS

I. Introduction

The Consent Decree between Essroc, U.S. EPA and Affected States (effective on February 16, 2012) calls for Essroc Cement Corp ("Essroc") to submit Semi-Annual Reports (due on January 30 and July 30) to EPA and the Affected States for three years. Thereafter, Essroc is to submit an Annual Report (due on January 30) to EPA and the Affected States. The report must include the following information:

a. Identify any and all dates on which Essroc has installed, or describe the progress of installation of, each Control Technology required for each Kiln under Section VI (NO_x Control Technology, Emission Limits, and Monitoring Requirements) and Section VII (SO_2 Control Technology, Emission Limits, and Monitoring Requirements), and describe any problems encountered or anticipated during such installation, together with implemented or proposed solutions;

b. Identify any and all dates on which Essroc has completed installation of, or describe the progress of installation of, each CEMS required under Section VI.B (NO_x Continuous Emission Monitoring Systems) and Section VII.B (SO_2 Continuous Emission Monitoring Systems), and describe any problems encountered or anticipated during such installation, together with implemented or proposed solutions;

c. Identify any and all dates on which Essroc Retired the Bessemer Kilns;

d. Provide all CEMS data collected for each Kiln, including an explanation of any periods of CEMS downtime together with any missing data for which Essroc applied missing data substitution procedures, under Section VI.B (NO_x Continuous Emission Monitoring Systems) and Section VII.B (SO_2 Continuous Emission Monitoring Systems);

e. Demonstrate compliance with all applicable 30- Day Rolling Average Emission Limits in Section VI (NO_x Control Technology, Emission Limits, and Monitoring Requirements) and Section VII (SO_2 Control Technology, Emission Limits, and Monitoring Requirements) of this Consent Decree;

f. Provide a complete description and status of all actions Essroc has undertaken to comply with the Appendix of this Consent Decree;

g. Demonstrate compliance with any applicable 30-Day Rolling Average Emission Limits established under Appendix A or B of this Consent Decree;

h. If applicable, describe the status of actions undertaken pursuant to Section IX (Prohibition on Netting Credits or Offsets from Required Controls) of this Consent Decree;

i. Describe the status of permit applications and any proposed SIP revisions required under this Consent Decree;

j. Describe the status of any operation and maintenance work relating to activities required under this Consent Decree;

Information regarding the Mitigation Projects; and

Description of any non-compliance with the requirements of this Consent Decree and an explanation of the violation's likely cause and of the remedial steps taken, or to be taken, to prevent or minimize such violation.

(Consent Decree, Paragraph 49).

The remainder of this report provides the necessary information for each of the Essroc kiln's identified in the Consent Decree: Bessemer Kiln 4, Bessemer Kiln 5, Martinsburg Kiln 1, Logansport Kiln 1, Logansport Kiln 2, Speed Kiln 1, Speed Kiln 2, Nazareth Kiln 1, and San Juan Kiln 3.

Note, Essroc previously reported that Bessemer Kiln 4 and Kiln 5 were retired in April 2009. Consequently, all Consent Decree activities have been completed for Bessemer Kiln 4 and Kiln 5. No reporting on Bessemer Kiln 4 and Kiln 5 is required by the Consent Decree in this or subsequent semi-annual reports.

II Kiln Specific Information Required by Paragraph 49 of the Consent Decree

A) Martinsburg Kiln 1

Requirements:

NOx: Achieve a 30-Day Rolling Average emission limit of 2.15 lb/ton of clinker using SNCR by December 31, 2012.

SO_2: Install Dry Scrubber technology and have in Continuous Operation by December 31, 2012. Then, determine 30-Day Rolling Average emission limit by Test & Set procedures (Appendix A), to be no higher than 1.50 lb/ton of clinker.

Status:

Paragraph 49 Reporting Requirements	Essroc's Status Report
a) Identify any and all dates on which Essroc has installed, or describe the progress of installation of, each Control Technology required for each Kiln under Section VI (NO_x Control Technology, Emission Limits, and Monitoring Requirements) and Section VII (SO_2 Control Technology, Emission Limits, and Monitoring Requirements), and describe any problems encountered or anticipated during such installation, together with implemented or proposed solutions.	NOx: Essroc achieved continuous operation of the SNCR prior to December 31, 2012. CEMS data provided in Attachment A documents that the 30-Day Rolling average emissions of NOx is less than the agreed-upon limit of 2.15 lb/ton of clinker. SO_2: Essroc achieved continuous operation of the Dry Scrubber prior to December 31, 2012. Essroc experienced a temporary malfunction of the Dry Scrubber on August 28, 2013. Essroc provided a complete report of the issue to EPA and West Virginia by letter dated September 13, 2013. The Dry Scrubber experienced a malfunction on November 25 and December 2, 2013. Essroc provided a complete report of the issue to EPA and West Virginia by letter dated December 6, 2013. CEMS data provided in Attachment A document that the 30-Day Rolling average emissions of SO_2 is less than 1.50 lb/ton of clinker, with the exception of the period of time during the optimization testing. Optimization was completed in 2013. The Optimization Report was provided to EPA and

Paragraph 49 Reporting Requirements	Essroc's Status Report
	the State on July 17, 2013. Essroc has determined that the optimized SO_2 emission rate is 1.50 lb/ton of clinker. EPA approved the Optimization Report and the emission limit of 1.5 lb/ton of clinker. EPA and West Virginia approved the Optimization Report on September 17, 2013.
b) Identify any and all dates on which Essroc has completed installation of, or describe the progress of installation of, each **CEMS** required under Section VI.B (NO_x Continuous Emission Monitoring Systems) and Section VII.B (SO_2 Continuous Emission Monitoring Systems), and describe any problems encountered or anticipated during such installation, together with implemented or proposed solutions.	CEMS installation was completed prior to the Effective Date of the Consent Decree. Essroc installed a new data acquisition system (DAS) for the CEMS. The new DAS manufactured by VIM Technologies uses the CEMLink 6 program. The new DAS has been running in parallel with the existing DAS, the PF Sistemi (Italian) system. Parallel data collection will confirm proper operation of the new system. Essroc will conduct RATA testing on the CEMS in 2Q 2014 which will further verify proper operation of the CEMLink 6 system. It is anticipated that full conversion to the new DAS will occur in the first half of 2014.
c) Identify any and all dates on which Essroc retired the Bessemer Kilns.	Not applicable
d) Provide all CEMS data collected for each Kiln, including an explanation of any periods of CEMS downtime together with any missing data for which Essroc applied missing data substitution procedures, under Section VI.B (NO_x Continuous Emission Monitoring Systems) and Section VII.B (SO_2 Continuous Emission Monitoring Systems).	CEMS data is provided as Attachment A.
e) Demonstrate compliance with all applicable 30- Day Rolling Average Emission Limits in Section VI (NO_x Control Technology, Emission Limits, and Monitoring Requirements) and Section VII (SO_2 Control Technology, Emission Limits, and Monitoring	NOx: As documented by the CEMS data provided in Attachment A, the 30-Day rolling average emission rate for this reporting period was below 2.15 lb/ton of clinker.

Paragraph 49 Reporting Requirements	Essroc's Status Report
Requirements) of this Consent Decree. NOx Control Technology Requirement: Achieve a 30-Day Rolling Average emission limit of 2.15 lb/ton of clinker using SNCR by December 31, 2012. SO_2 Control Technology Requirement: Install Dry Scrubber technology and Continuously Operate by December 31, 2012. Determine emission limit by Test & Set (Appendix A), to be no higher than 1.50 lb/ton of clinker.	SO_2: As documented by the CEMS data provided in Attachment A, the 30-Day rolling average emission rate for this reporting was below 1.5 lb/ton of clinker.
f) Provide a complete description and status of all actions Essroc has undertaken to comply with the Appendix of this Consent Decree. Appendix A: Test & Set for SO_2: Baseline Data Collection Baseline Data Report: Submit Baseline Data Report (within **45 days** of completing the Baseline Data Collection)(App A, Para 7) Optimization Protocol Submit Optimization Protocol to EPA by at least **9/30/12** for approval. (Not less than 90 days prior to the commencement of optimization) (requirements for the protocol are found in App A, Para 11). Continuous Operation: by December 31, 2012. Optimization Period: Conduct in accordance with the Optimization Protocol. Shall last no longer than 150 operating days.	Optimization Protocol: Approved by EPA prior to conducting tests. Continuous Operation was achieved prior to the December 31, 2012 deadline. Optimization Period: Optimization, using the approved Optimization Protocol has been implemented. Optimization Report: The Optimization Report was submitted to EPA and the West Virginia on July 17, 2013. EPA and West Virginia approved the Optimization Report on September 17, 2013 Demonstration Period: Essroc commenced the Demonstration Period on September 25, 2013. Demonstration Report: This is the first periodic report for the period September 25, 2013 through December 31, 2013. The emissions data is provided in Attachment A.

Paragraph 49 Reporting Requirements	Essroc's Status Report
Optimization Report : Submit a report to EPA within 30 days following completion of the Optimization Period. Demonstration Period : To commence 7 days after Essroc receives EPA's approval of the final Optimization Report. Demonstration shall last 300 Operating Days. Periodic report to EPA every 3 months. Demonstration Report : To be submitted within 60 days of completing the Demonstration Period. Report must propose the 30-Day Rolling Average Emission Limit. EPA can approve the proposed limit or can establish an alternative limit. Essroc can invoke Dispute Resolution if it disagrees with the alternative limit, see Para 74 of the Consent Decree. Appendix B: Not applicable Appendix C: Mitigation Projects: By December 31, 2013, Essroc shall replace the engine in Quarry Truck, Model CAT 777 C, Serial Number 49XJ545 with a new replacement engine in accordance with Tier 2 engine standards at 40 CFR Part 89, at a cost of $270,000. By December 31, 2013, Essroc shall replace the engine in Quarry Loader, Model CAT 992 D, Serial Number 7MJ00734 with a new replacement engine in accordance with Tier 2 engine standards at 40 CFR Part 89, at a cost of $176,000. 1) Essroc must certify that it is not otherwise required to replace the engine that is the	Essroc has had issues with operability using lime slurry in the dry scrubber, including reported incidents occurring on February 23, August 28, November 25, and December 2. Essroc is evaluating the possibility of replacing the current lime slurry system with injection of dry lime in order to eliminate operational downtime of the dry scrubber. Appendix B: Not applicable Appendix C: The engine replacement project for the Quarry Truck, Model CAT 777 C, Serial Number 49XJ545 was completed on December 23, 2013. Essroc submitted the report to EPA and West Virginia on January 7, 2014. The engine replacement project and Quarry Loader, Model CAT 992 D, Serial Number 7MJ00734 was completed on November 22, 2013. Essroc submitted the report to EPA and West Virginia on January 7, 2014.

Paragraph 49 Reporting Requirements	Essroc's Status Report
subject of the Mitigation Project. The certification must be submitted to EPA and the Affect State 30 days prior to each engine replacement. (Paragraph 13; pg. 15) 2) Within 60 days of completing <u>each</u> Mitigation Project, Essroc must submit a report to EPA and the Affected State documenting the date of completion, results, emissions reductions, and costs associated with each Mitigation Project. (Paragraph 15; pg. 15) 3) Beginning on September 1, 2012, Essroc must provide a semi-annual or annual update concerning progress of the Mitigation Project. This progress report may be addressed in the semi-annual or annual report discussed above. (Paragraph 14; pg. 15)	
g) Demonstrate compliance with any applicable 30-Day Rolling Average Emission Limits established under Appendix A or B of this Consent Decree	In process, pursuant to Appendix A schedule, see above. As documented by the CEMS data provided in Attachment A, the 30-Day rolling average NOx emission rate is below 2.15 lb/ton of clinker. EPA and West Virginia approved the optimized SO_2 emission rate of 1.5 lbs/ton of clinker.
h) If applicable, describe the status of actions undertaken pursuant to Section IX (Prohibition on Netting Credits or Offsets from Required Controls) of this Consent Decree	Not applicable
i) Describe the status of permit applications and any proposed SIP revisions required under this Consent Decree	All permit revisions were approved prior to control device installation and no SIP revisions have been required.
j) Describe the status of any operation and maintenance work relating to activities and required under this Consent Decree	Not applicable

Paragraph 49 Reporting Requirements	Essroc's Status Report
Description of any non-compliance with the requirements of this Consent Decree and an explanation of the violation's likely cause and of the remedial steps taken, or to be taken, to prevent or minimize such violation.	See discussion above regarding Dry Scrubber malfunctions.

B) Logansport Kiln 1

Requirements:

NOx: Conduct an SCR Pilot Study (to run a minimum of 4 months) in accordance with Appendix B. Submit the SCR Pilot Report by July 31, 2013 with results of the SCR Pilot Study. If SCR works, install a full-scale system by September 30, 2014 and continuously operate by December 31, 2014. Conduct an SCR Demonstration Period and establish an emission limit by the Test & Set procedures found in Appendix B. If SCR does not work, install SNCR by September 30, 2014 and propose a Test & Set limit under Appendix A that is no less stringent than 7.00 lb/ton of clinker by December 31, 2014.

SO_2: Achieve emission limit of 3.50 lb/ton of clinker using a Dry Scrubber by December 31, 2013.

Status:

Paragraph 49 Reporting Requirements	Essroc's Status Report
a. Identify any and all dates on which Essroc has installed, or describe the progress of installation of, each **Control Technology** required for each Kiln under Section VI (NO_x Control Technology, Emission Limits, and Monitoring Requirements) and Section VII (SO_2 Control Technology, Emission Limits, and Monitoring Requirements), and describe any problems encountered or anticipated during such installation, together with implemented or proposed solutions.	NOx: In process, see below regarding status of the SCR pilot study. SO2: Compliance with the Emission Limit is demonstrated with 30-day rolling average emission rate prior to December 31, 2013. See Attachment B.
b. Identify any and all dates on which Essroc has completed installation of, or describe the progress of installation of, each **CEMS** required under Section VI.B (NO_x Continuous Emission Monitoring Systems) and Section VII.B (SO_2 Continuous Emission Monitoring Systems), and describe any problems encountered or anticipated during such installation, together with implemented or proposed solutions.	CEMS installation was completed prior to the Effective Date of the Consent Decree. CEMS data is provided as Attachment B.
c. Identify any and all dates on which Essroc Retired the Bessemer Kilns	Not applicable.

Paragraph 49 Reporting Requirements	Essroc's Status Report
d. Provide all CEMS data collected for each Kiln, including an explanation of any periods of CEMS downtime together with any missing data for which Essroc applied missing data substitution procedures, under Section VI.B (NO_x Continuous Emission Monitoring Systems) and Section VII.B (SO_2 Continuous Emission Monitoring Systems).	See attached.
e. Demonstrate compliance with all applicable 30- Day Rolling Average Emission Limits in Section VI (NO_x Control Technology, Emission Limits, and Monitoring Requirements) and Section VII (SO_2 Control Technology, Emission Limits, and Monitoring Requirements) of this Consent Decree.	In process, see below regarding status.
f. Provide a complete description and status of all actions Essroc has undertaken to comply with the Appendix of this Consent Decree <u>Appendix A</u>: Applicable only if SNCR is used because the SCR was deemed not successful. <u>Appendix B</u>: for SCR pilot study and potential full-scale demonstration. SCR Pilot Study: Essroc will design a study in accordance with the Pilot Study requirements found in Appendix B. The pilot scale SCR shall operate for a minimum of 4 months. SCR Pilot Study Report: Shall contain all of the information identified in Appendix B and be submitted to EPA by July 31, 2013. Continuous Operation: If EPA approves the Pilot Study Report and SCR is feasible, Essroc will install and continuously operate SCR by September 30, 2014. If EPA concurs that SCR is not feasible, Essroc will install and continuously operate SNCR by September 30, 2014. SCR Demonstration Period: shall commence	<u>Appendix A</u>: Not applicable until SCR is determined to be unworkable. <u>Appendix B</u>: The SCR Pilot Study equipment was delivered to the site in January 2013. The SCR Pilot study was conducted between January and July 2013. The SCR Pilot Study Report was submitted to EPA and IDEM prior to the July 31, 2013 agreed date. Essroc concluded that the SCR pilot study was not successful and that SCR technology is not a feasible alternative to SNCR. EPA disapproved the SCR Pilot Study Report. Essroc has invoked informal dispute resolution provided for by the Consent Decree. Essroc and EPA agreed to continue informal dispute resolution.

Paragraph 49 Reporting Requirements	Essroc's Status Report
by December 31, 2014, span at least 140 operating days, and satisfy the requirements of Appendix B. SCR Demonstration Report: To identify a proposed 40-Day Rolling Average Emission Limit for NOx. SNCR Install: If SNCR is installed, Essroc shall propose a 30-Day Rolling Average Emission Limit for NOx by December 31, 2014. Appendix C: Not applicable.	
g. Demonstrate compliance with any applicable 30-Day Rolling Average Emission Limits established under Appendix A or B of this Consent Decree.	In process.
h. If applicable, describe the status of actions undertaken pursuant to Section IX (Prohibition on Netting Credits or Offsets from Required Controls) of this Consent Decree.	Not applicable.
i. Describe the status of permit applications and any proposed SIP revisions required under this Consent Decree.	To be completed at a future date.
j. Describe the status of any operation and maintenance work relating to activities required under this Consent Decree.	Not applicable at this time.
Description of any non-compliance with the requirements of this Consent Decree and an explanation of the violation's likely cause and of the remedial steps taken, or to be taken, to prevent or minimize such violation.	Not applicable.

C) Logansport Kiln 2

Kiln was restarted on February 26, 2013. Notice of restart was provided to EPA and IDEM on March 19, 2013.

Requirements:

NOx: If SCR is installed on Logansport Kiln 1, Essroc shall install SCR on Logansport Kiln 2 by September 30, 2015. Emission limit to be established by Test & Set. If SNCR is installed on Logansport Kiln 1, Essroc shall install SNCR on Logansport Kiln 2 by September 30, 2015. Emission limit to be established by Test & Set, and must be below 7.00 lb/ton of clinker.

SO_2: Achieve emission limit of 4.80 lb/ton of clinker using a Dry Scrubber by December 31, 2014.

Status:

Paragraph 49 Reporting Requirements	Essroc's Status Report
a. Identify any and all dates on which Essroc has installed, or describe the progress of installation of, each **Control Technology** required for each Kiln under Section VI (NO_x Control Technology, Emission Limits, and Monitoring Requirements) and Section VII (SO_2 Control Technology, Emission Limits, and Monitoring Requirements), and describe any problems encountered or anticipated during such installation, together with implemented or proposed solutions.	NOx: Direction will depend upon the results of the SCR Pilot Study to be conducted on Logansport Kiln 1 and the plan to recommence operations. SO2: In process to achieve installation and operation of Dry Scrubber by December 31, 2014 if kiln operations are recommenced.
b. Identify any and all dates on which Essroc has completed installation of, or describe the progress of installation of, each **CEMS** required under Section VI.B (NO_x Continuous Emission Monitoring Systems) and Section VII.B (SO_2 Continuous Emission Monitoring Systems), and describe any problems encountered or anticipated during such installation, together with implemented or proposed solutions.	CEMS installation was completed prior to the Effective Date of the Consent Decree. CEMS data is provided as Attachment C.
c. Identify any and all dates on which Essroc Retired the Bessemer Kilns.	Not applicable.
d. Provide all CEMS data collected for each Kiln, including an explanation of any periods	CEMS data provided as Attachment C.

Paragraph 49 Reporting Requirements	Essroc's Status Report
of CEMS downtime together with any missing data for which Essroc applied missing data substitution procedures, under Section VI.B (NO_x Continuous Emission Monitoring Systems) and Section VII.B (SO_2 Continuous Emission Monitoring Systems).	
e. Demonstrate compliance with all applicable 30- Day Rolling Average Emission Limits in Section VI (NO_x Control Technology, Emission Limits, and Monitoring Requirements) and Section VII (SO_2 Control Technology, Emission Limits, and Monitoring Requirements) of this Consent Decree.	Not applicable at this time.
f. Provide a complete description and status of all actions Essroc has undertaken to comply with the Appendix of this Consent Decree. Appendix A: If applicable, install SNCR by September 30, 2015. (Applicable if SNCR is used because the SCR was deemed not successful during the Kiln 1 SCR Pilot Study.) Propose a 30-Day Rolling Average Emission Limit by December 31, 2015. Appendix B: If feasible, install and Continuously Operate SCR by September 30, 2015. Conduct Demonstration Period and propose a 30-Day Rolling Average Emission Limit by May 31, 2016. Appendix C: Not applicable.	Not applicable at this time.
g. Demonstrate compliance with any applicable 30-Day Rolling Average Emission Limits established under Appendix A or B of this Consent Decree.	Not applicable at this time.
h. If applicable, describe the status of actions undertaken pursuant to Section IX (Prohibition on Netting Credits or Offsets from Required Controls) of this Consent Decree.	Not applicable.

Paragraph 49 Reporting Requirements	Essroc's Status Report
i. Describe the status of permit applications and any proposed SIP revisions required under this Consent Decree.	To be completed at a future date.
j. Describe the status of any operation and maintenance work relating to activities required under this Consent Decree.	Not applicable.
Information regarding the Mitigation Projects.	Not applicable.
Description of any non-compliance with the requirements of this Consent Decree and an explanation of the violation's likely cause and of the remedial steps taken, or to be taken, to prevent or minimize such violation.	Not applicable.

D) Speed Kiln 1

This kiln went into Temporary Cessation on February 16, 2012. Essroc briefly operated the kiln in June and July 2013 and then returned the kiln to Temporary Cessation status. If the kiln is restarted after December 31, 2013, it will be restarted with SNCR and Dry Scrubber technology.

Requirements:

NOx: Achieve a 30-Day Rolling Average emission limit of 3.50 lb/ton of clinker using SNCR by December 31, 2013.

SO_2: Achieve a 30-Day Rolling Average emission limit of 1.00 lb/ton of clinker (including the alkali bypass) using a Dry Scrubber by December 31, 2013.

Status:

Paragraph 49 Reporting Requirements	Essroc's Status Report
a. Identify any and all dates on which Essroc has installed, or describe the progress of installation of, each **Control Technology** required for each Kiln under Section VI (NO_x Control Technology, Emission Limits, and Monitoring Requirements) and Section VII (SO_2 Control Technology, Emission Limits, and Monitoring Requirements), and describe any problems encountered or anticipated during such installation, together with implemented or proposed solutions.	As provided by Paragraph 31 of the Consent Decree, if the kiln is brought back into operation on or after December 31, 2013, the kiln will have SNCR and Dry Scrubber technology installed and operating to meet the applicable 30-Day Rolling Average emission limits.
b. Identify any and all dates on which Essroc has completed installation of, or describe the progress of installation of, each **CEMS** required under Section VI.B (NO_x Continuous Emission Monitoring Systems) and Section VII.B (SO_2 Continuous Emission Monitoring Systems), and describe any problems encountered or anticipated during such installation, together with implemented or proposed solutions.	Kiln currently in Temporary Cessation. CEMS data from the limited dates of operation are provided as Attachment D.
c. Identify any and all dates on which Essroc Retired the Bessemer Kilns.	Not applicable.
d. Provide all CEMS data collected for each Kiln, including an explanation of any periods of CEMS downtime together with any missing	Not applicable. Kiln in Temporary Cessation.

Paragraph 49 Reporting Requirements	Essroc's Status Report
data for which Essroc applied missing data substitution procedures, under Section VI.B (NO_x Continuous Emission Monitoring Systems) and Section VII.B (SO_2 Continuous Emission Monitoring Systems).	
e. Demonstrate compliance with all applicable 30- Day Rolling Average Emission Limits in Section VI (NO_x Control Technology, Emission Limits, and Monitoring Requirements) and Section VII (SO_2 Control Technology, Emission Limits, and Monitoring Requirements) of this Consent Decree.	Kiln in Temporary Cessation.
f. Provide a complete description and status of all actions Essroc has undertaken to comply with the Appendix of this Consent Decree. Appendix A: Not applicable Appendix B: Not applicable Appendix C: <u>Speed plant mitigation project:</u> By December 31, 2012, Essroc shall replace the engine in Quarry Truck, Model CAT 773 B #3, Serial Number 63W1386 with a new replacement engine in accordance with Tier 1 engine standards at 40 CFR Part 89, at a cost of $150,000. 1) Essroc must certify that it is not otherwise required to replace the engine that is the subject of the Mitigation Project. The certification must be submitted to EPA and the Affect State 30 days prior to each engine replacement. (Paragraph 13; pg. 15) 2) Within 60 days of completing <u>each</u> Mitigation Project, Essroc must submit a report to EPA and the Affected State documenting the date of completion, results, emissions reductions, and costs associated with each Mitigation Project. (Paragraph 15; pg. 15)	Appendix A: Not applicable Appendix B: Not applicable Appendix C: <u>Speed plant mitigation project:</u> Completed. Essroc submitted the Certification to EPA on April 2, 2012. Essroc completed the engine replacement project on or before the December 31, 2012 compliance date. The report on the mitigation project was provided in a previous semi-annual report.

Paragraph 49 Reporting Requirements	Essroc's Status Report
3) Beginning on September 1, 2012, Essroc must provide a semi-annual or annual update concerning progress of the Mitigation Project. This progress report may be addressed in the semi-annual or annual report discussed above. (Paragraph 14; pg. 15).	
g. Demonstrate compliance with any applicable 30-Day Rolling Average Emission Limits established under Appendix A or B of this Consent Decree.	Not applicable.
h. If applicable, describe the status of actions undertaken pursuant to Section IX (Prohibition on Netting Credits or Offsets from Required Controls) of this Consent Decree.	Not applicable.
i. Describe the status of permit applications and any proposed SIP revisions required under this Consent Decree.	To be completed at a future date.
j. Describe the status of any operation and maintenance work relating to activities required under this Consent Decree.	Not applicable.
Description of any non-compliance with the requirements of this Consent Decree and an explanation of the violation's likely cause and of the remedial steps taken, or to be taken, to prevent or minimize such violation.	Not applicable.

E) Speed Kiln 2

Requirements:

NOx: Achieve a 30-Day Rolling Average emission limit of 2.10 lb/ton of clinker using SNCR by December 31, 2012.

SO_2 : Achieve emission limit no higher than 1.70 lb/ton of clinker (including the alkali bypass) using a Dry Scrubber by December 31, 2013.

Status:

Paragraph 49 Reporting Requirements	Essroc's Status Report
a. Identify any and all dates on which Essroc has installed, or describe the progress of installation of, each Control Technology required for each Kiln under Section VI (NO_x Control Technology, Emission Limits, and Monitoring Requirements) and Section VII (SO_2 Control Technology, Emission Limits, and Monitoring Requirements), and describe any problems encountered or anticipated during such installation, together with implemented or proposed solutions.	NOx: Essroc achieved continuous operation of the SNCR prior to December 31, 2012. CEMS data provided in Attachment E document that the 30-Day Rolling average emissions of NOx is less than the agreed-upon limit of 2.10 lb/ton of clinker. SO2: Construction of the Dry Scrubber was completed prior to December 31, 2013.
b. Identify any and all dates on which Essroc has completed installation of, or describe the progress of installation of, each CEMS required under Section VI.B (NO_x Continuous Emission Monitoring Systems) and Section VII.B (SO_2 Continuous Emission Monitoring Systems), and describe any problems encountered or anticipated during such installation, together with implemented or proposed solutions.	CEMS installation was completed prior to the Effective Date of the Consent Decree. CEMS data is provided as Attachment E.
c. Identify any and all dates on which Essroc Retired the Bessemer Kilns.	Not applicable.
d. Provide all CEMS data collected for each Kiln, including an explanation of any periods of CEMS downtime together with any missing data for which Essroc applied missing data substitution procedures, under Section VI.B (NO_x Continuous Emission Monitoring Systems) and Section VII.B (SO_2 Continuous	See Attachment E for the CEMS data summary.

Paragraph 49 Reporting Requirements	Essroc's Status Report
Emission Monitoring Systems).	
e. Demonstrate compliance with all applicable 30- Day Rolling Average Emission Limits in Section VI (NO_x Control Technology, Emission Limits, and Monitoring Requirements) and Section VII (SO_2 Control Technology, Emission Limits, and Monitoring Requirements) of this Consent Decree.	NOx: Compliance with the Emission Limit has been demonstrated with the 30-day rolling average emission rate commencing on December 31, 2012. See Attachment E. SO2: Compliance with the Emission Limit is demonstrated with 30-day rolling average emission rate prior to December 31, 2013. See Attachment E.
f. Provide a complete description and status of all actions Essroc has undertaken to comply with the Appendix of this Consent Decree Appendix A: Not applicable. Appendix B: Not applicable. Appendix C: <u>Speed mitigation project:</u> By December 31, 2012, Essroc shall replace the engine in Quarry Truck, Model CAT 773 B #3, Serial Number 63W1386 with a new Tier 1 engine. 1) Certification: Essroc must certify that it is not otherwise required to replace the engine that is the subject of the Mitigation Project. The certification must be submitted to EPA and the Affect State 30 days prior to each engine replacement. (Paragraph 13; pg. 15) 2) Project: Within 60 days of completing <u>each</u> Mitigation Project, Essroc must submit a report to EPA and the Affected State documenting the date of completion, results, emissions reductions, and costs associated with each Mitigation Project. (Paragraph 15; pg. 15) 3) Report: Beginning on September 1, 2012, Essroc must provide a semi-annual or annual update concerning progress of the Mitigation	Appendix A: Not applicable. Appendix B: Not applicable. Appendix C: <u>Speed mitigation project</u> Completed. Essroc submitted the Certification to EPA on April 2, 2012. Essroc completed the engine replacement project on or before the December 31, 2012 compliance date. The report on the mitigation project was provided with a previous semi-annual report.

Paragraph 49 Reporting Requirements	Essroc's Status Report
Project. This progress report may be addressed in the semi-annual or annual report discussed above. (Paragraph 14; pg. 15).	
g. Demonstrate compliance with any applicable 30-Day Rolling Average Emission Limits established under Appendix A or B of this Consent Decree.	Not applicable.
h. If applicable, describe the status of actions undertaken pursuant to Section IX (Prohibition on Netting Credits or Offsets from Required Controls) of this Consent Decree.	Not applicable.
i. Describe the status of permit applications and any proposed SIP revisions required under this Consent Decree.	To be completed at a future date.
j. Describe the status of any operation and maintenance work relating to activities required under this Consent Decree.	Not applicable.
Description of any non-compliance with the requirements of this Consent Decree and an explanation of the violation's likely cause and of the remedial steps taken, or to be taken, to prevent or minimize such violation.	Not applicable.

F) Nazareth Kiln 1

Requirements:

NOx: Achieve a 30-Day Rolling Average emission limit of 2.30 lb/ton of clinker using SNCR by July 1, 2012.

SO_2: Achieve emission limit no higher than 1.80 lb/ton of clinker using a Dry Scrubber by December 31, 2014.

Status:

Paragraph 49 Reporting Requirements	Essroc's Status Report
a. Identify any and all dates on which Essroc has installed, or describe the progress of installation of, each Control Technology required for each Kiln under Section VI (NO_x Control Technology, Emission Limits, and Monitoring Requirements) and Section VII (SO_2 Control Technology, Emission Limits, and Monitoring Requirements), and describe any problems encountered or anticipated during such installation, together with implemented or proposed solutions.	NOx: SNCR was installed in May 2011, prior to the Effective Date of this Consent Decree. CEMS data provided as Attachment F document that the NOx emission rate is below the agreed-upon limit of 2.30 lb/ton of clinker. SO2: Construction of the Dry Scrubber is planned to meet the December 31, 2014 compliance date.
b. Identify any and all dates on which Essroc has completed installation of, or describe the progress of installation of, each CEMS required under Section VI.B (NO_x Continuous Emission Monitoring Systems) and Section VII.B (SO_2 Continuous Emission Monitoring Systems), and describe any problems encountered or anticipated during such installation, together with implemented or proposed solutions.	CEMS installation was completed prior to the Effective Date of the Consent Decree. CEMS data are provided as Attachment F.
c. Identify any and all dates on which Essroc Retired the Bessemer Kilns.	Not applicable.
d. Provide all CEMS data collected for each Kiln, including an explanation of any periods of CEMS downtime together with any missing data for which Essroc applied missing data substitution procedures, under Section VI.B (NO_x Continuous Emission Monitoring Systems) and Section VII.B (SO_2 Continuous	See Attachment F for the CEMS data.

Paragraph 49 Reporting Requirements	Essroc's Status Report
Emission Monitoring Systems).	
e. Demonstrate compliance with all applicable 30- Day Rolling Average Emission Limits in Section VI (NO_x Control Technology, Emission Limits, and Monitoring Requirements) and Section VII (SO_2 Control Technology, Emission Limits, and Monitoring Requirements) of this Consent Decree.	Demonstration of the NOx 30-day rolling average Emission Limit of 2.30 lb / ton of clinker became applicable on July 1, 2012. Data provided in Attachment F demonstrates that the 30-day rolling average Emission Rate is below 2.30 lb/ton of clinker limit.
f. Provide a complete description and status of all actions Essroc has undertaken to comply with the Appendix of this Consent Decree Appendix A: Not applicable. Appendix B: Not applicable. Appendix C: <u>Nazareth mitigation project:</u> By December 31, 2012, Essroc shall replace the engine in Loader Model CAT 988F, Serial Number 2ZR01015 with a new replacement engine in accordance with Tier 2 engine standards at 40 CFR Part 89, at a cost of $149,000. 1) Certification: Essroc must certify that it is not otherwise required to replace the engine that is the subject of the Mitigation Project. The certification must be submitted to EPA and the Affect State 30 days prior to each engine replacement. (Paragraph 13; pg. 15) 2) Project: Within 60 days of completing <u>each</u> Mitigation Project, Essroc must submit a report to EPA and the Affected State documenting the date of completion, results, emissions reductions, and costs associated with each Mitigation Project. (Paragraph 15; pg. 15) 3) Report: Beginning on September 1, 2012, Essroc must provide a semi-annual or annual update concerning progress of the	Appendix A and B: Not applicable. Appendix C: <u>Nazareth mitigation project:</u> Completed. Essroc submitted the Certification to EPA on April 2, 2012. Essroc completed the engine replacement on May 31, 2012. The report on the completed project was submitted in a prior semi-annual report.

Paragraph 49 Reporting Requirements	Essroc's Status Report
Mitigation Project. This progress report may be addressed in the semi-annual or annual report discussed above. (Paragraph 14; pg. 15).	
g. Demonstrate compliance with any applicable 30-Day Rolling Average Emission Limits established under Appendix A or B of this Consent Decree.	Not applicable.
h. If applicable, describe the status of actions undertaken pursuant to Section IX (Prohibition on Netting Credits or Offsets from Required Controls) of this Consent Decree.	Not applicable.
i. Describe the status of permit applications and any proposed SIP revisions required under this Consent Decree.	To be accomplished at a future date.
j. Describe the status of any operation and maintenance work relating to activities required under this Consent Decree.	Not applicable.
Description of any non-compliance with the requirements of this Consent Decree and an explanation of the violation's likely cause and of the remedial steps taken, or to be taken, to prevent or minimize such violation.	Not applicable.

G) San Juan Kiln 3

Requirements:

NOx: Install SNCR by December 31, 2013. Emission limit to be established by Test & Set and shall be no higher than 2.30 lb/ton of clinker.

SO_2 :Achieve emission limit no higher than 1.00 lb/ton of clinker using a Dry Scrubber by December 31, 2013.

Status:

Paragraph 49 Reporting Requirements	Essroc's Status Report
a. Identify any and all dates on which Essroc has installed, or describe the progress of installation of, each **Control Technology** required for each Kiln under Section VI (NO_x Control Technology, Emission Limits, and Monitoring Requirements) and Section VII (SO_2 Control Technology, Emission Limits, and Monitoring Requirements), and describe any problems encountered or anticipated during such installation, together with implemented or proposed solutions.	The kiln was in a state of temporary cessation on the compliance date of December 31, 2013; therefore, SNCR installation did not occur by the compliance date. The kiln was in a state of temporary cessation on the compliance date of December 31, 2013; therefore, Dry Scrubber installation did not occur by the compliance date. Essroc operated the kiln on January 8 through 10, 2014. Essroc informed EPA and the Puerto Rico EQB of the non-compliance by letter dated January 14, 2014. On January 17, 2014, the kiln started with the SNCR and Dry Scrubber in operation.
b. Identify any and all dates on which Essroc has completed installation of, or describe the progress of installation of, each **CEMS** required under Section VI.B (NO_x Continuous Emission Monitoring Systems) and Section VII.B (SO_2 Continuous Emission Monitoring Systems), and describe any problems encountered or anticipated during such installation, together with implemented or proposed solutions.	CEMS installation was completed prior to the Effective Date of the Consent Decree. Attachment G provides the NOx and SO_2 CEMS data.
c. Identify any and all dates on which Essroc Retired the Bessemer Kilns.	Not applicable to San Juan.

Paragraph 49 Reporting Requirements	Essroc's Status Report
d. Provide all CEMS data collected for each Kiln, including an explanation of any periods of CEMS downtime together with any missing data for which Essroc applied missing data substitution procedures, under Section VI.B (NO_x Continuous Emission Monitoring Systems) and Section VII.B (SO_2 Continuous Emission Monitoring Systems).	See Attachment G.
e. Demonstrate compliance with all applicable 30- Day Rolling Average Emission Limits in Section VI (NO_x Control Technology, Emission Limits, and Monitoring Requirements) and Section VII (SO_2 Control Technology, Emission Limits, and Monitoring Requirements) of this Consent Decree.	In process.
f. Provide a complete description and status of all actions Essroc has undertaken to comply with the Appendix of this Consent Decree: Appendix A: Test & Set for NOx: Baseline Data Collection: Must start at least 180 days prior to start-up of equipment, unless other period approved by EPA. Baseline Data Collection must include full range of normal kiln operations including changes in raw mix chemistry due to differing clinker manufacture, changes in production levels. Collect data for **180 days**, or other time period if approved by EPA. Baseline Data Report: Submit Baseline Data Report (within **45 days** of completing the Baseline Data Collection)(App A, Para 7) Optimization Protocol: Submit Optimization Protocol to EPA by at least **9/30/13** for approval. (Not less than 90 days prior to the commencement of optimization) (requirements for the protocol are found in App A, Para 11). Continuous Operation: by December 31, 2013.	Appendix A: Test & Set for NOx: Design Report: EPA and Puerto Rico EQB approved the Design Report on August 7, 2013. Baseline Data Report: Essroc submitted the Baseline Data Report on October 17, 2013. Optimization Protocol: Essroc submitted the Optimization Protocol to EPA on October 17, 2013. Continuous Operation: The SNCR went into shakedown period on January 17, 2014. The shakedown period will last no more than 90 Operating Days. Optimization Period: The optimization period will commence following the shakedown period.

Paragraph 49 Reporting Requirements	Essroc's Status Report
Optimization Period: Conduct in accordance with the Optimization Protocol. Shall last no longer than 150 operating days. Optimization Report : Submit a report to EPA within 30 days following completion of the Optimization Period. Demonstration Period : To commence 7 days after Essroc receives EPA's approval of the final Optimization Report. Demonstration shall last 300 Operating Days. Periodic report to EPA every 3 months. Demonstration Report : To be submitted within 60 days of completing the Demonstration Period. Report must propose the 30-Day Rolling Average Emission Limit. EPA can approve the proposed limit or can establish an alternative limit. Essroc can invoke Dispute Resolution if it disagrees with the alternative limit, see Para 74 of the Consent Decree. Appendix B. Not applicable. Appendix C. Not applicable.	Optimization Report: To follow. Demonstration Period: To follow. Demonstration Report: To follow.
g. Demonstrate compliance with any applicable 30-Day Rolling Average Emission Limits established under Appendix A or B of this Consent Decree.	In process for NOx.
h. If applicable, describe the status of actions undertaken pursuant to Section IX (Prohibition on Netting Credits or Offsets from Required Controls) of this Consent Decree.	Not applicable.
i. Describe the status of permit applications and any proposed SIP revisions required under this Consent Decree.	To be implemented at a future date.
j. Describe the status of any operation and maintenance work relating to activities required under this Consent Decree.	Not applicable.
Description of any non-compliance with the	Essroc operated the kiln on January 8 through

Paragraph 49 Reporting Requirements	Essroc's Status Report
requirements of this Consent Decree and an explanation of the violation's likely cause and of the remedial steps taken, or to be taken, to prevent or minimize such violation.	10, 2014 without the Dry Scrubber and SNCR systems in operation. Essroc informed EPA and the Puerto Rico EQB of the non-compliance by letter dated January 14, 2014. On January 17, 2014, the kiln started with the SNCR and Dry Scrubber in operation.

III. Responsible Official Certification

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Derek Nicholls
Senior Vice President & Technical Director
Essroc Cement Corp

Attachment A

CEMS Data For Martinsburg Kiln 1

Date (Operating Days Only)	SO2 30 day rolling average (lb/ton of clinker) (Limit = 1.50)	NOX 30 day rolling average (lb/ton of clinker) (Limit = 2.15)
7/1/2013	0.83	1.71
7/2/2013	0.86	1.73
7/3/2013	0.90	1.75
7/4/2013	0.88	1.76
7/5/2013	0.92	1.76
7/6/2013	0.92	1.75
7/7/2013	0.89	1.75
7/8/2013	0.93	1.74
7/9/2013	0.95	1.73
7/10/2013	0.97	1.75
7/11/2013	0.98	1.74
7/12/2013	0.99	1.73
7/13/2013	1.00	1.73
7/14/2013	1.02	1.73
7/15/2013	1.05	1.72
7/16/2013	1.04	1.72
7/17/2013	1.06	1.73
7/18/2013	1.08	1.72
7/19/2013	1.12	1.73
7/20/2013	1.17	1.73
7/21/2013	1.18	1.74
7/22/2013	1.19	1.74
7/23/2013	1.23	1.73
7/24/2013	1.21	1.73
7/25/2013	1.22	1.72
7/26/2013	1.22	1.72
7/27/2013	1.21	1.73
7/28/2013	1.18	1.73
7/29/2013	1.19	1.74
7/30/2013	1.17	1.73
7/31/2013	1.17	1.73
8/1/2013	1.17	1.72

8/2/2013	1.12	1.71
8/3/2013	1.14	1.68
8/4/2013	1.11	1.68
8/5/2013	1.10	1.69
8/6/2013	1.10	1.70
8/7/2013	1.09	1.70
8/8/2013	1.07	1.71
8/9/2013	1.06	1.71
8/10/2013	1.08	1.72
8/11/2013	1.11	1.71
8/12/2013	1.10	1.71
8/13/2013	1.10	1.71
8/14/2013	1.06	1.72
8/15/2013	1.09	1.72
8/16/2013	1.08	1.72
8/17/2013	1.11	1.72
8/18/2013	1.15	1.71
8/19/2013	1.13	1.70
8/20/2013	1.15	1.70
8/21/2013	1.17	1.70
8/22/2013	1.17	1.71
8/23/2013	1.21	1.73
8/24/2013	1.23	1.73
8/25/2013	1.25	1.74
8/26/2013	1.25	1.74
8/27/2013	1.28	1.75
8/28/2013	1.33	1.77
8/29/2013	1.38	1.78
8/30/2013	1.38	1.79
8/31/2013	1.41	1.79
9/1/2013	1.48	1.80
9/2/2013	1.49	1.82
9/3/2013	1.54	1.83
9/6/2013	1.58	1.84
9/7/2013	1.62	1.85
9/8/2013	1.60	1.85
9/9/2013	1.61	1.85
9/10/2013	1.64	1.86
9/11/2013	1.60	1.86
9/12/2013	1.57	1.87
9/13/2013	1.55	1.88
9/14/2013	1.54	1.88
9/15/2013	1.53	1.87

9/16/2013	1.51	1.87
9/17/2013	1.53	1.87
9/18/2013	1.51	1.89
9/19/2013	1.43	1.90
9/20/2013	1.43	1.93
9/21/2013	1.46	1.94
9/22/2013	1.49	1.95
9/23/2013	1.45	1.96
9/24/2013	1.40	1.96
9/25/2013	1.42	1.98
9/26/2013	1.40	1.99
9/27/2013	1.42	2.01
9/28/2013	1.39	2.01
9/29/2013	1.32	2.01
9/30/2013	1.29	2.02
10/1/2013	1.36	2.03
10/2/2013	1.35	2.03
10/3/2013	1.26	2.03
10/4/2013	1.27	2.02
10/5/2013	1.28	2.03
10/6/2013	1.33	2.02
10/7/2013	1.31	1.99
10/8/2013	1.31	1.98
10/9/2013	1.30	1.95
10/10/2013	1.35	1.95
10/11/2013	1.34	1.93
10/12/2013	1.33	1.92
10/13/2013	1.36	1.91
10/14/2013	1.38	1.90
10/15/2013	1.37	1.91
10/16/2013	1.36	1.90
10/17/2013	1.37	1.91
10/18/2013	1.35	1.89
10/19/2013	1.36	1.89
10/20/2013	1.35	1.87
10/21/2013	1.30	1.87
10/22/2013	1.25	1.87
10/23/2013	1.24	1.87
10/24/2013	1.30	1.87
10/25/2013	1.30	1.86
10/26/2013	1.31	1.87
10/27/2013	1.29	1.87
10/28/2013	1.29	1.89

10/29/2013	1.29	1.88
10/30/2013	1.26	1.88
10/31/2013	1.19	1.87
11/1/2013	1.17	1.87
11/2/2013	1.19	1.87
11/3/2013	1.16	1.88
11/4/2013	1.12	1.87
11/5/2013	1.03	1.89
11/6/2013	1.01	1.92
11/7/2013	1.04	1.94
11/8/2013	1.03	1.96
11/9/2013	0.97	1.96
11/10/2013	0.99	1.97
11/11/2013	1.01	1.99
11/12/2013	0.99	2.01
11/13/2013	0.99	2.02
11/14/2013	1.02	2.03
11/15/2013	1.02	2.04
11/16/2013	0.98	2.04
11/17/2013	0.96	2.04
11/18/2013	0.94	2.04
11/19/2013	0.93	2.04
11/20/2013	0.91	2.04
11/21/2013	0.91	2.04
11/22/2013	0.92	2.04
11/23/2013	0.88	2.04
11/24/2013	0.91	2.05
11/25/2013	0.94	2.07
11/26/2013	1.02	2.07
11/27/2013	1.03	2.06
11/28/2013	1.03	2.07
11/29/2013	1.03	2.08
11/30/2013	1.04	2.10
12/1/2013	1.06	2.12
12/2/2013	1.15	2.12
12/3/2013	1.19	2.11
12/4/2013	1.23	2.10
12/5/2013	1.29	2.05
12/6/2013	1.31	2.00
12/7/2013	1.28	1.97
12/8/2013	1.25	1.96
12/9/2013	1.26	1.96
12/10/2013	1.23	1.95

12/11/2013	1.20	1.94
12/12/2013	1.23	1.92
12/13/2013	1.24	1.92
12/14/2013	1.29	1.90
12/15/2013	1.32	1.86
12/16/2013	1.39	1.82
12/17/2013	1.42	1.78
12/18/2013	1.47	1.75
12/19/2013	1.49	1.75
12/20/2013	1.49	1.72
12/21/2013	1.50	1.70
12/22/2013	1.49	1.67
12/23/2013	1.50	1.67
12/24/2013	1.40	1.63
12/25/2013	1.30	1.59
12/26/2013	1.18	1.56
12/27/2013	1.17	1.54
12/28/2013	1.15	1.53

Attachment B
CEMS Data For Logansport Kiln 1

Date	SO2 30-day	NOx 30 day
	lb/ton	lb/ton
7/1/13	0.75	3.81
7/2/13	0.75	3.88
7/3/13	0.74	3.85
7/4/13	0.80	3.98
7/5/13	0.83	3.85
7/6/13	0.84	3.79
7/7/13	0.84	3.74
7/8/13	0.84	3.66
7/9/13	0.84	3.56
7/10/13	0.79	3.61
7/11/13	0.78	3.53
7/12/13	0.73	3.50
7/13/13	0.70	3.48
7/14/13	0.69	3.31
7/15/13	0.67	3.28
7/16/13	0.70	3.29
7/17/13	0.67	3.34
7/18/13	0.62	3.41
7/19/13	0.61	3.39
7/20/13	0.63	3.35
7/21/13	0.67	3.22
7/22/13	0.66	3.19
7/23/13	0.66	3.15
7/24/13	0.68	3.15
7/25/13	0.68	3.12
7/26/13	0.65	3.09
7/28/13	0.64	3.21
7/29/13	0.63	3.31
7/30/13	0.65	3.32
8/9/13	0.64	3.31
8/10/13	0.70	3.37
8/11/13	0.71	3.43
8/12/13	0.71	3.56
8/13/13	0.65	3.73
8/14/13	0.63	3.95

Date	SO2 30-day	NOx 30 day
	lb/ton	lb/ton
8/15/13	0.62	4.06
8/16/13	0.77	4.38
8/17/13	0.80	4.67
8/18/13	0.80	4.77
8/19/13	0.78	4.79
8/20/13	0.77	4.91
8/21/13	0.80	5.03
8/22/13	0.82	5.32
8/23/13	0.81	5.56
8/24/13	0.81	5.63
8/25/13	0.78	5.66
8/26/13	0.77	5.73
8/27/13	0.76	5.72
8/28/13	0.73	5.80
8/29/13	0.70	5.97
8/30/13	0.65	6.07
8/31/13	0.64	6.18
9/1/13	0.68	6.23
9/2/13	0.72	6.35
9/3/13	0.76	6.49
9/4/13	0.82	6.49
9/5/13	0.84	6.46
9/6/13	0.86	6.44
9/7/13	0.92	6.48
9/8/13	0.93	6.47
9/9/13	0.94	6.39
9/10/13	0.92	6.33
9/11/13	0.92	6.27
9/12/13	0.91	6.06
9/13/13	0.93	5.96
9/14/13	0.92	5.96
9/15/13	0.80	5.78
9/16/13	0.78	5.64
9/17/13	0.78	5.63
9/18/13	0.80	5.60
9/19/13	0.79	5.47
9/20/13	0.76	5.37
9/21/13	0.74	5.16

Date	SO2 30-day	NOx 30 day
	lb/ton	lb/ton
9/22/13	0.74	5.04
9/23/13	0.75	5.02
9/24/13	0.76	5.02
9/25/13	0.76	5.00
9/26/13	0.77	4.99
9/27/13	0.78	4.94
9/28/13	0.77	4.74
9/29/13	0.75	4.68
9/30/13	0.74	4.70
10/1/13	0.73	4.97
10/2/13	0.70	4.95
10/12/13	0.67	4.95
10/13/13	0.61	4.97
10/14/13	0.56	4.91
10/15/13	0.56	4.91
10/16/13	0.49	4.85
10/17/13	0.47	4.87
10/18/13	0.38	4.88
10/19/13	0.37	4.85
10/20/13	0.36	4.83
10/21/13	0.36	4.79
10/22/13	0.33	4.74
10/23/13	0.34	4.73
10/24/13	0.37	4.84
10/25/13	0.37	4.80
10/26/13	0.37	4.72
10/27/13	0.38	4.66
10/29/13	0.40	4.78
10/30/13	0.40	4.89
10/31/13	0.41	4.85
11/1/13	0.42	4.85
11/2/13	0.41	4.99
11/3/13	0.40	5.07
11/4/13	0.46	5.04
11/5/13	0.50	5.04
11/6/13	0.60	4.99
11/7/13	0.60	5.08
11/8/13	0.62	5.07

Date	SO2 30-day	NOx 30 day
	lb/ton	lb/ton
11/9/13	0.69	5.06
11/10/13	0.73	4.79
11/11/13	0.74	4.78
11/12/13	0.80	4.74
11/13/13	0.88	4.68
11/14/13	1.01	4.60
11/15/13	1.29	4.57
11/16/13	1.56	4.51
11/17/13	1.71	4.42
11/18/13	1.95	4.54
11/19/13	1.99	4.53
11/20/13	2.00	4.54
11/21/13	2.00	4.60
11/22/13	2.01	4.61
11/23/13	2.02	4.59
11/24/13	1.98	4.48
11/25/13	1.97	4.50
11/26/13	1.96	4.53
11/27/13	1.93	4.55
11/28/13	1.87	4.43
11/29/13	1.85	4.32
11/30/13	1.83	4.38
12/1/13	1.79	4.38
12/2/13	1.78	4.26
12/3/13	1.77	4.19
12/4/13	1.73	4.24
12/5/13	1.69	4.19
12/6/13	1.61	4.11
12/7/13	1.59	4.13
12/8/13	1.57	4.13
12/9/13	1.49	4.07
12/10/13	1.41	4.01
12/11/13	1.42	3.97
12/12/13	1.64	3.95
12/13/13	1.70	4.00
12/14/13	1.78	4.13
12/15/13	1.58	4.12
12/16/13	1.58	4.23

Date	SO2 30-day	NOx 30 day
	lb/ton	lb/ton
12/17/13	1.48	4.34
12/18/13	1.32	4.21
12/19/13	1.27	4.21
12/20/13	1.25	4.22
12/21/13	1.24	4.27
12/22/13	1.23	4.29
12/23/13	1.23	4.32
12/24/13	1.23	4.34
12/25/13	1.23	4.36
12/26/13	1.23	4.38
12/27/13	1.24	4.38

Attachment C

CEMS Data For Logansport Kiln 2

Date	SO2 30-day	NOx 30 day
	lb/ton	lb/ton
7/1/13	5.05	4.81
7/2/13	5.23	4.84
7/3/13	5.33	4.87
7/4/13	5.35	4.92
7/5/13	5.40	4.88
7/6/13	5.30	4.50
8/4/13	5.32	4.28
8/5/13	5.37	4.22
8/6/13	5.78	4.17
8/7/13	6.20	4.14
8/8/13	6.22	4.07
8/9/13	6.36	4.04
8/10/13	6.52	3.99
8/11/13	6.57	3.94
8/12/13	6.43	3.87
8/13/13	6.28	3.81
8/14/13	6.24	3.82
8/15/13	6.45	3.81
8/16/13	6.34	3.80
8/17/13	6.25	3.82
8/18/13	6.35	3.86
8/19/13	6.22	3.80
8/20/13	6.09	3.75
8/21/13	5.59	3.66
8/22/13	5.10	3.61
8/23/13	4.40	3.63
8/24/13	4.15	3.63
8/25/13	4.05	3.59
8/26/13	3.87	3.48
9/4/13	4.00	3.42
9/5/13	4.55	3.37
9/6/13	4.97	3.31

Date	SO2 30-day	NOx 30 day
	lb/ton	lb/ton
9/7/13	5.01	3.25
10/12/13	5.13	3.30
10/13/13	5.03	3.27
10/14/13	4.92	3.29
10/15/13	4.83	3.32
10/16/13	4.77	3.36
10/17/13	4.27	3.44
10/18/13	3.78	3.52
10/19/13	3.65	3.56
10/20/13	3.41	3.56
10/21/13	3.09	3.62
10/22/13	2.93	3.67
10/23/13	2.90	3.72
10/24/13	2.83	3.73
10/25/13	2.73	3.68
10/26/13	2.54	3.73
10/27/13	2.51	3.73
10/28/13	2.43	3.71
10/29/13	2.13	3.67
10/30/13	2.12	3.71
10/31/13	2.17	3.79
11/11/13	2.19	3.86
11/12/13	2.25	3.83
11/13/13	2.39	3.73
11/14/13	2.50	3.67
11/15/13	2.66	3.65
11/16/13	2.70	3.70
11/17/13	2.58	3.68
11/18/13	1.95	3.65
11/19/13	1.42	3.64
11/20/13	1.30	3.64
11/21/13	1.25	3.54
12/9/13	1.28	3.56
12/10/13	1.46	3.50
12/11/13	1.53	3.50
12/12/13	1.67	3.46
12/13/13	1.74	3.38

Attachment D

CEMS Data For Speed Kiln 1

Date	30 day average SO2 (lb/ton)	30 day average NOx (lb/ton)
7/1/2013	4.17	3.74
7/2/2013	4.20	3.82
7/3/2013	4.46	3.78
7/4/2013	4.74	3.88
7/5/2013	4.93	3.92
7/6/2013	5.06	3.99
7/7/2013	5.64	4.00
7/8/2013	5.96	4.03
12/10/2013	5.86	4.06
12/11/2013	5.87	4.09

Attachment E

CEMS Data For Speed Kiln 2

	Kiln 2 NOx	Kiln 2 SO2
	30-day	30-day
	#/ton RA	#/ton RA
7/1/2013	1.98	2.13
7/2/2013	1.98	2.06
7/3/2013	1.98	2.03
7/4/2013	1.98	1.98
7/5/2013	1.97	1.95
7/6/2013	1.96	1.88
7/7/2013	1.95	1.82
7/8/2013	1.92	1.79
7/9/2013	1.92	1.77
7/10/2013	1.88	1.76
7/11/2013	1.86	1.82
7/12/2013	1.85	1.88
7/13/2013	1.84	1.89
7/14/2013	1.84	1.91
7/15/2013	1.82	1.92
7/16/2013	1.8	1.9
7/17/2013	1.79	1.93
7/18/2013	1.76	1.96
7/19/2013	1.74	2
7/20/2013	1.7	2.04
7/21/2013	1.69	2.09
7/22/2013	1.69	2.11
7/23/2013	1.69	2.12
7/24/2013	1.7	2.06
7/25/2013	1.7	2.03
7/26/2013	1.7	2.04
7/27/2013	1.7	2.04
7/28/2013	1.69	2.05
7/29/2013	1.68	2.03
7/30/2013	1.68	2
7/31/2013	1.66	2.01
8/1/2013	1.66	2.04
8/2/2013	1.66	2.01
8/3/2013	1.67	2.02
8/4/2013	1.67	2.01
8/5/2013	1.67	2.03
8/6/2013	1.68	2.04
8/7/2013	1.69	2.06
8/8/2013	1.68	2.07
8/9/2013	1.7	2.07
8/10/2013	1.7	2.01
8/11/2013	1.73	1.99

8/12/2013	1.73	1.95
8/13/2013	1.71	1.91
8/14/2013	1.71	1.88
8/15/2013	1.74	1.85
8/16/2013	1.76	1.82
8/17/2013	1.76	1.82
8/18/2013	1.78	1.78
8/19/2013	1.81	1.76
8/20/2013	1.82	1.74
8/21/2013	1.81	1.75
8/22/2013	1.79	1.75
8/23/2013	1.78	1.77
8/24/2013	1.79	1.77
8/25/2013	1.79	1.77
8/26/2013	1.8	1.8
8/27/2013	1.81	1.81
8/28/2013	1.82	1.8
8/29/2013	1.83	1.82
8/30/2013	1.84	1.82
8/31/2013	1.86	1.8
9/1/2013	1.86	1.8
9/2/2013	1.86	1.79
9/3/2013	1.86	1.78
9/4/2013	1.87	1.78
9/5/2013	1.87	1.76
9/6/2013	1.88	1.76
9/7/2013	1.91	1.79
9/8/2013	1.92	1.77
9/9/2013	1.93	1.78
9/10/2013	1.93	1.77
9/11/2013	1.94	1.76
9/12/2013	1.94	1.77
9/13/2013	1.93	1.77
9/14/2013	1.94	1.77
9/15/2013	1.93	1.77
9/16/2013	1.93	1.76
9/17/2013	1.92	1.76
9/18/2013	1.91	1.75
9/19/2013	1.91	1.74
9/20/2013	1.91	1.71
9/21/2013	1.91	1.7
9/22/2013	1.91	1.66
9/23/2013	1.9	1.65
9/24/2013	1.88	1.68
9/25/2013	1.86	1.69
9/26/2013	1.84	1.71
9/27/2013	1.83	1.72
9/28/2013	1.82	1.75
9/29/2013	1.82	1.74

9/30/2013	1.8	1.76
10/1/2013	1.79	1.76
10/2/2013	1.78	1.77
10/3/2013	1.77	1.79
10/4/2013	1.77	1.77
10/5/2013	1.75	1.77
10/6/2013	1.74	1.76
10/7/2013	1.74	1.72
10/8/2013	1.73	1.71
10/9/2013	1.73	1.76
10/10/2013	1.71	1.77
10/11/2013	1.68	1.8
10/12/2013	1.68	1.82
10/13/2013	1.68	1.83
10/14/2013	1.67	1.84
10/15/2013	1.66	1.85
10/16/2013	1.64	1.92
10/17/2013	1.63	1.99
10/18/2013	1.61	2.18
10/19/2013	1.59	2.23
10/20/2013	1.58	2.36
10/21/2013	1.58	2.43
10/22/2013	1.59	2.5
10/23/2013	1.59	2.51
10/24/2013	1.61	2.5
10/25/2013	1.62	2.52
10/26/2013	1.63	2.54
10/27/2013	1.65	2.58
10/28/2013	1.67	2.59
10/29/2013	1.67	2.64
10/30/2013	1.71	2.69
10/31/2013	1.7	2.71
11/1/2013	1.71	2.69
11/2/2013	1.72	2.66
11/3/2013	1.71	2.71
11/4/2013	1.74	2.74
11/5/2013	1.74	2.76
11/6/2013	1.74	2.79
11/7/2013	1.74	2.81
11/8/2013	1.74	2.77
11/9/2013	1.76	2.79
11/10/2013	1.79	2.77
11/11/2013	1.82	2.78
11/12/2013	1.84	2.78
11/13/2013	1.86	2.77
11/14/2013	1.9	2.73
11/15/2013	1.94	2.63
11/16/2013	1.95	2.52
11/17/2013	1.97	2.31

11/18/2013	1.99	2.22
11/19/2013	2.02	2.07
11/20/2013	2.03	1.97
11/21/2013	2.03	1.88
11/22/2013	2.03	1.85
11/23/2013	2.01	1.78
11/24/2013	2.01	1.7
11/25/2013	2.01	1.7
11/26/2013	2.01	1.7
11/27/2013	2.01	1.7
11/28/2013	2.01	1.7
11/29/2013	2.01	1.7
11/30/2013	2.01	1.7
12/1/2013	2.01	1.7
12/2/2013	2.01	1.7
12/3/2013	2.02	1.66
12/4/2013	2.02	1.59
12/5/2013	2.03	1.5
12/6/2013	2.03	1.42
12/7/2013	1.99	1.33
12/8/2013	2	1.28
12/9/2013	2	1.22
12/10/2013	1.99	1.18
12/11/2013	2.01	1.11
12/12/2013	2.01	1.04
12/13/2013	2.02	0.99
12/14/2013	2.02	0.92
12/15/2013	2.03	0.85
12/16/2013	2.04	0.8
12/17/2013	2.04	0.76
12/18/2013	2.03	0.72
12/19/2013	2.02	0.68
12/20/2013	1.98	0.67
12/21/2013	1.97	0.64
12/22/2013	1.95	0.65
12/23/2013	1.94	0.71
12/24/2013	1.93	0.76
12/25/2013	1.94	0.78
12/26/2013	1.94	0.81
12/27/2013	1.94	0.81
12/28/2013	1.94	0.81
12/29/2013	1.94	0.81
12/30/2013	1.94	0.81
12/31/2013	1.94	0.83

Attachment F

CEMS Data For Nazareth Kiln 1

	# NOx/ton clinker, 30day rolling average	# SOx/ton clinker, 30day rolling average
7/1/2013	2.16	1.84
7/2/2013	2.15	1.82
7/3/2013	2.14	1.79
7/4/2013	2.13	1.74
7/5/2013	2.12	1.72
7/6/2013	2.12	1.73
7/7/2013	2.12	1.72
7/8/2013	2.12	1.71
7/9/2013	2.11	1.69
7/10/2013	2.11	1.70
7/11/2013	2.11	1.68
7/12/2013	2.11	1.67
7/13/2013	2.11	1.67
7/14/2013	2.10	1.69
7/15/2013	2.10	1.70
7/16/2013	2.09	1.71
7/17/2013	2.09	1.77
7/18/2013	2.08	1.83
7/19/2013	2.08	1.84
7/20/2013	2.08	1.82
7/21/2013	2.09	1.85
7/22/2013	2.07	1.84
7/23/2013	2.06	1.82
7/24/2013	2.05	1.81
7/25/2013	2.06	1.80
7/26/2013	2.07	1.76
7/27/2013	2.07	1.74
7/28/2013	2.07	1.71
7/29/2013	2.06	1.69
7/30/2013	2.06	1.67
7/31/2013	2.06	1.65
8/1/2013	2.07	1.66
8/2/2013	2.08	1.69
8/3/2013	2.08	1.72

8/4/2013	2.09	1.72
8/5/2013	2.09	1.73
8/11/2013	2.12	1.76
8/12/2013	2.15	1.77
8/13/2013	2.15	1.75
8/14/2013	2.15	1.73
8/15/2013	2.15	1.72
8/16/2013	2.15	1.70
8/17/2013	2.15	1.66
8/18/2013	2.15	1.61
8/19/2013	2.16	1.57
8/20/2013	2.16	1.57
8/21/2013	2.17	1.54
8/22/2013	2.16	1.50
8/23/2013	2.16	1.48
8/24/2013	2.16	1.45
8/25/2013	2.17	1.47
8/26/2013	2.20	1.48
8/27/2013	2.22	1.50
8/28/2013	2.23	1.51
8/29/2013	2.22	1.52
8/30/2013	2.22	1.53
8/31/2013	2.21	1.56
9/1/2013	2.20	1.56
9/2/2013	2.19	1.55
9/5/2013	2.20	1.56
9/6/2013	2.16	1.59
9/7/2013	2.12	1.57
9/8/2013	2.09	1.53
9/9/2013	2.11	1.51
9/10/2013	2.11	1.50
9/11/2013	2.11	1.48
9/12/2013	2.05	1.44
9/13/2013	2.02	1.47
9/14/2013	2.03	1.55
9/15/2013	2.02	1.65
9/16/2013	2.00	1.70
9/17/2013	1.98	1.69
9/18/2013	1.97	1.70
9/19/2013	1.96	1.69
9/20/2013	1.96	1.66
9/21/2013	1.95	1.65
9/22/2013	1.95	1.62

9/23/2013	1.95	1.66
9/24/2013	1.95	1.71
9/25/2013	1.96	1.70
9/26/2013	1.95	1.69
9/27/2013	1.94	1.71
9/28/2013	1.94	1.78
9/29/2013	1.96	1.85
9/30/2013	1.96	1.91
10/1/2013	1.97	1.97
10/2/2013	1.99	1.99
10/3/2013	2.02	2.03
10/4/2013	2.04	2.05
10/5/2013	2.04	2.04
10/6/2013	2.08	2.06
10/7/2013	2.10	2.10
10/8/2013	2.11	2.14
10/9/2013	2.07	2.12
10/10/2013	2.06	2.10
10/11/2013	2.06	2.10
10/12/2013	2.08	2.12
10/13/2013	2.06	2.06
10/14/2013	2.06	2.01
10/15/2013	2.07	1.95
10/16/2013	2.08	1.93
10/17/2013	2.09	1.94
10/18/2013	2.09	1.93
10/19/2013	2.07	1.92
10/20/2013	2.06	1.94
10/21/2013	2.06	1.97
10/22/2013	2.06	1.99
10/23/2013	2.06	1.99
10/24/2013	2.07	1.98
10/25/2013	2.06	1.96
10/26/2013	2.06	1.93
10/27/2013	2.05	1.92
10/28/2013	2.02	1.86
10/29/2013	2.02	1.81
11/2/2013	2.01	1.77
11/3/2013	2.01	1.70
11/4/2013	2.01	1.63
11/5/2013	2.00	1.56
11/6/2013	2.00	1.52
11/7/2013	2.00	1.48

11/8/2013	2.01	1.45
11/9/2013	2.03	1.41
11/10/2013	2.05	1.37
11/11/2013	2.08	1.39
11/12/2013	2.10	1.37
11/13/2013	2.11	1.35
11/14/2013	2.11	1.32
11/15/2013	2.12	1.29
11/16/2013	2.12	1.28
11/17/2013	2.12	1.28
11/18/2013	2.11	1.29
11/19/2013	2.11	1.28
11/20/2013	2.12	1.26
11/21/2013	2.16	1.27
11/22/2013	2.17	1.26
11/23/2013	2.18	1.23
11/24/2013	2.19	1.18
11/25/2013	2.18	1.14
11/26/2013	2.16	1.13
11/27/2013	2.17	1.14
11/28/2013	2.16	1.15
11/29/2013	2.16	1.19
11/30/2013	2.18	1.24
12/1/2013	2.17	1.27
12/2/2013	2.16	1.27
12/4/2013	2.18	1.30
12/5/2013	2.18	1.32
12/6/2013	2.18	1.35
12/9/2013	2.17	1.36
12/10/2013	2.20	1.38
12/11/2013	2.19	1.37
12/13/2013	2.19	1.42
12/14/2013	2.23	1.41
12/15/2013	2.22	1.34
12/16/2013	2.22	1.30
12/17/2013	2.20	1.27
12/18/2013	2.19	1.28
12/19/2013	2.18	1.32
12/20/2013	2.18	1.34
12/21/2013	2.17	1.34
12/22/2013	2.16	1.34
12/23/2013	2.18	1.36
12/24/2013	2.20	1.41

12/25/2013	2.18	1.42
12/26/2013	2.18	1.43
12/27/2013	2.17	1.42
12/28/2013	2.17	1.47

Attachment G

CEMS Data For San Juan Kiln 3

Date	SO2 30 day (lb/ton clinker)	NOX 30 day (lb/ton clinker)
7/1/2013	0.03	1.41
7/2/2013	0.03	1.40
7/3/2013	0.03	1.42
7/4/2013	0.03	1.43
7/6/2013	0.03	1.44
7/7/2013	0.03	1.45
7/8/2013	0.04	1.44
7/10/2013	0.04	1.43
7/12/2013	0.04	1.40
7/13/2013	0.04	1.44
7/14/2013	0.04	1.40
7/15/2013	0.05	1.38
9/5/2013	0.05	1.38
9/6/2013	0.05	1.36
9/7/2013	0.05	1.31
9/8/2013	0.05	1.23
9/9/2013	0.05	1.15
9/10/2013	0.05	1.17
9/11/2013	0.08	1.27
9/12/2013	0.12	1.25
9/13/2013	0.13	1.31
9/14/2013	0.09	1.37
9/15/2013	0.10	1.38
9/16/2013	0.10	1.31
9/17/2013	0.10	1.30
9/18/2013	0.10	1.35
9/19/2013	0.13	1.28
9/20/2013	0.14	1.26
9/21/2013	0.15	1.27
9/22/2013	0.15	1.32
9/23/2013	0.15	1.35
9/24/2013	0.15	1.35
9/25/2013	0.15	1.32
9/26/2013	0.20	1.35
9/27/2013	0.19	1.37

9/28/2013	0.20	1.40
9/29/2013	0.19	1.43
9/30/2013	0.18	1.47
10/1/2013	0.18	1.51
10/4/2013	0.18	1.53
10/5/2013	0.19	1.55
10/6/2013	0.19	1.57
10/7/2013	0.19	1.56
10/8/2013	0.19	1.54
10/9/2013	0.19	1.52
10/11/2013	0.19	1.51
10/12/2013	0.20	1.56
10/13/2013	0.22	1.51
10/14/2013	0.24	1.54
10/15/2013	0.20	1.57
10/16/2013	0.20	1.56
10/17/2013	0.20	1.48
10/18/2013	0.20	1.45
10/19/2013	0.20	1.43
10/20/2013	0.19	1.45
10/21/2013	0.19	1.49
10/22/2013	0.17	1.50
11/4/2013	0.17	1.48
11/5/2013	0.15	1.49
11/6/2013	0.15	1.46
11/7/2013	0.15	1.40
11/8/2013	0.14	1.36
11/9/2013	0.14	1.37
11/10/2013	0.09	1.37
11/11/2013	0.09	1.29
11/12/2013	0.09	1.31
11/13/2013	0.09	1.30
11/14/2013	0.09	1.28
11/15/2013	0.10	1.22
11/16/2013	0.10	1.24
11/17/2013	0.09	1.25
11/18/2013	0.09	1.21
11/19/2013	0.10	1.24
11/20/2013	0.09	1.27
11/21/2013	0.09	1.35
11/22/2013	0.09	1.42

11/23/2013	0.08	1.42
11/24/2013	0.06	1.44